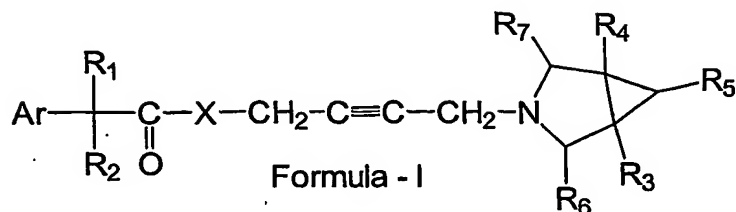


We Claim:

1. A compound having the structure of Formula I :



10 and its pharmaceutical acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein

Ar represents an aryl or a heteroaryl ring having 1-2 hetero atoms selected from the group consisting of oxygen, sulphur and nitrogen atoms, the aryl or heteroaryl rings may be unsubstituted or substituted by one two three substituents independently selected from lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhalo alkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxy, nitro, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkoxy (C<sub>1</sub>-C<sub>4</sub>), amino or lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino or N-lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino carbonyl;

20 R<sub>1</sub> represents a hydrogen, hydroxy, hydroxy methyl, amino, alkoxy, carbamoyl or halogen;

R<sub>2</sub> represents C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl ring, a C<sub>3</sub>-C<sub>7</sub> cycloalkenyl ring, an aryl or a heteroaryl ring having 1 to 2 hetero atoms selected from a group consisting of oxygen, sulphur and nitrogen atoms; the aryl or a heteroaryl ring may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxy, nitro, lower alkoxy carbonyl, halogen, lower alkoxy carbonyl halogen, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower per haloalkoxy (C<sub>1</sub>-C<sub>4</sub>), unsubstituted amino, lower alkylamino (C<sub>1</sub>-C<sub>4</sub>) or N-lower alkyl (C<sub>1</sub>-C<sub>4</sub>) aminocarbonyl;

30 X represents an oxygen, sulphur, nitrogen or no atom; and

R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> independently represent, a hydrogen, lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxyl, nitro, lower alkoxy carbonyl,

halogen, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkoxy (C<sub>1</sub>-C<sub>4</sub>), amino or lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino.

2. A compound selected from the group consisting of:

- 5 4-[(1R, 5S)-1,5-dimethyl-3-azabicyclo [3.1.0]hex-3-yl]but-2-ynyl-2-hydroxy-2,2-diphenylacetate (Compound No.1)
- 4-[(1R, 5S)-1,5-dimethyl-3-azabicyclo [3.1.0]hex-3-yl]but-2-ynyl-2-cyclohexyl-2-hydroxy phenylacetate (Compound No.2)
- 4-[(1R, 5S)-1,5-dimethyl-3-azabicyclo [3.1.0]hex-3-yl]but-2-ynyl-2-cyclopentyl-2-hydroxy phenyl acetate(Compound No.3)
- 10 4-[(1R, 5S)-1-methyl-3-azabicyclo [3.1.0]-hex-3-yl] but-2-ynyl-2-hydroxy-2,2-diphenylacetate (Compound No.4)
- 4-[(1R, 5S)-1-methyl-3-azabicyclo [3.1.0]hex-3-yl]but-2-ynyl-2-cyclopentyl-2-hydroxy phenylacetate (Compound No.5)
- 15 4-[(1R, 5S)-3-azabicyclo [3.1.0]-hex-3-yl]but-2-ynyl-2-hydroxy-2,2-diphenylacetate (Compound No.6)
- 4-[(1R, 5S)-3-azabicyclo [3.1.0]-hex-3-yl]but-2-ynyl-2-cyclohexyl-2-hydroxy phenylacetate (Compound No.7)
- 4-[(1R, 5S)-3-azabicyclo[3.1.0]-hex-3-yl]but-2-ynyl-2-cyclopentyl-2-hydroxy phenylacetate (Compound No.8)
- 20 N-{4-[(1R, 5S)-3-azabicyclo[3.1.0]-hex-3-yl]but-2-ynyl}-2-hydroxy-2-cyclohexyl-2-phenylacetamide (Compound No.9)
- N-{4-[(1R, 5S)-3-azabicyclo[3.1.0]-hex-3-yl]but-2-ynyl}-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No.10)
- 25 N-{4-[(1R, 5S)-3-azabicyclo[3.1.0]-hex-3-yl]but-2-ynyl}-2-hydroxy-2,2-diphenylacetamide (Compound No.11)
- N-{4-[(1R, 5S)-3-azabicyclo[3.1.0]-hex-3-yl] -but-2-ynyl}2-hydroxy- bis (4-fluorophenyl)acetamide (Compound No.12)
- 4-[(1R,5S) -3-azabicyclo[3.1.0]hex-3-yl]-but-2-ynyl-2-hydroxy-bis-[4-fluorophenyl]acetate(Compound No.13)
- 30 4-[(1R,5S)-3-azabicyclo[3.1.0]hex-3-yl]-but-2-ynyl-2-cyclopentyl-2-hydroxy-[4-methoxyphenyl]acetate (Compound No.14)
- 4-[(1R,5S)-3-azabicyclo[3.1.0]hex-3-yl]-but-2-ynyl-2-cyclopentyl-2-hydroxy(4-methylphenyl)acetate (Compound No.15)

4-[(1S,5R)-2-methyl-3-azabicyclo [3.1.0]hex-3-yl]butyl-2-ynyl-2-hydroxy-2,2-diphenyl acetate (Compound No.16)

4-[(1S,5R)-2-methyl-3-azabicyclo(3.1.0)hex-3-yl]-but-2-ynyl-2-cyclopentyl-2-hydroxyphenylacetate (Compound No.17)

5 4-[(1S,5R)-2-methyl-3-azabicyclo[3.1.0]hex-3-yl]-but-2-ynyl-2-cyclohexyl-2-hydroxy phenylacetate (Compound No.18)

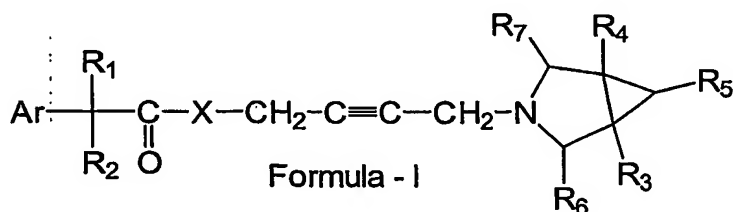
2-R-(+), 4-[(1R,5S)-3-azabicyclo[3.1.0]hex-3-yl]but-2-ynyl-2-cyclopentyl-2-hydroxy phenylacetate (Compound No.19)

10 2S(-), 4-[(1R, 5S)-3-azabicyclo[3.1.0]hex-3-yl]but-2-ynyl-2-cyclopentyl-2-hydroxy phenyl acetate (Compound No.20)

2R (+), 4[(1R, 5S)-3-azabicyclo[3.1.0]hex-3-yl]but-2-ynyl-2-cyclopentyl-2-hydroxy phenylacetate hydrochloride (Compound No.21)

3. A pharmaceutical composition comprising a therapeutically effective amount of a compound as defined in claim 1 or 2 together with pharmaceutically acceptable carriers, excipients or diluents.

4. A method for treatment or prophylaxis of an animal or human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of a compound having the structure of Formula I,



or its pharmaceutical acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein

Ar represents an aryl or a heteroaryl ring having 1-2 hetero atoms selected from the group consisting of oxygen, sulphur and nitrogen atoms, the aryl or heteroaryl rings may be unsubstituted or substituted by one two three substituents

independently selected from lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhalo alkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxy, nitro, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkoxy (C<sub>1</sub>-C<sub>4</sub>), amino or lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino or N-lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino carbonyl;

R<sub>1</sub> represents a hydrogen, hydroxy, hydroxy methyl, amino, alkoxy, carbamoyl or halogen;

R<sub>2</sub> represents C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl ring, a C<sub>3</sub>-C<sub>7</sub> cycloalkenyl ring, an aryl or a heteroaryl ring having 1 to 2 hetero atoms selected from a group consisting of oxygen, sulphur and nitrogen atoms; the aryl or a heteroaryl ring may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxy, nitro, lower alkoxy carbonyl, halogen, lower alkoxy carbonyl halogen, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower per haloalkoxy (C<sub>1</sub>-C<sub>4</sub>), unsubstituted amino, lower alkylamino (C<sub>1</sub>-C<sub>4</sub>) or N-lower alkyl (C<sub>1</sub>-C<sub>4</sub>) aminocarbonyl;

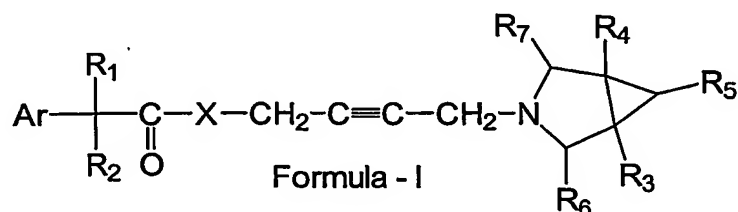
X represents an oxygen, sulphur, nitrogen or no atom; and

R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> independently represent, hydrogen, lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxyl, nitro, lower alkoxy carbonyl, halogen, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkoxy (C<sub>1</sub>-C<sub>4</sub>), amino or lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino.

5. The method according to claim 4 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastro intestinal hyperkinesis.

6. The method for treatment or prophylaxis of an animal or human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of the pharmaceutical composition according to claim 3.

7. The method according to claim 6 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes and gastro intestinal hyperkinesis.
- 5 8. A process of preparing a compound of Formula I,



10

or its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein:

15

Ar represents an aryl or a heteroaryl ring having 1-2 hetero atoms selected from the group consisting of oxygen, sulphur and nitrogen atoms, the aryl or heteroaryl rings may be unsubstituted or substituted by one two three substituents independently selected from lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhalo alkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxy, nitro, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkoxy (C<sub>1</sub>-C<sub>4</sub>), amino or lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino or N-lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino carbonyl;

20

R<sub>1</sub> represents a hydrogen, hydroxy, hydroxy methyl, amino, alkoxy, carbamoyl or halogen;

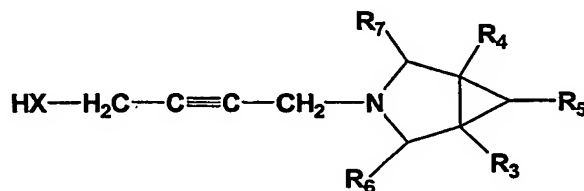
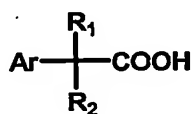
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R<sub>2</sub> represents C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl ring, a C<sub>3</sub>-C<sub>7</sub> cycloalkenyl ring, an aryl or a heteroaryl ring having 1 to 2 hetero atoms selected from a group consisting of oxygen, sulphur and nitrogen atoms; the aryl or a heteroaryl ring may be unsubstituted or substituted by one to three substituents independently selected from lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxy, nitro, lower alkoxy carbonyl, halogen, lower alkoxy carbonyl halogen, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower per haloalkoxy (C<sub>1</sub>-C<sub>4</sub>), unsubstituted amino, lower alkylamino (C<sub>1</sub>-C<sub>4</sub>) or N-lower alkyl (C<sub>1</sub>-C<sub>4</sub>) aminocarbonyl;

X represents an oxygen, sulphur, nitrogen or no atom; and

R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> independently represent, hydrogen, lower alkyl (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkyl (C<sub>1</sub>-C<sub>4</sub>), cyano, hydroxyl, nitro, lower alkoxy carbonyl, halogen, lower alkoxy (C<sub>1</sub>-C<sub>4</sub>), lower perhaloalkoxy (C<sub>1</sub>-C<sub>4</sub>), amino or lower alkyl (C<sub>1</sub>-C<sub>4</sub>) amino, said process comprising:

condensing a compound of Formula II with a compound of Formula III



Formula-II

Formula III

in the presence of a condensing agent to give a compound of Formula I.

9. The process according to claim 8 wherein the condensing agent is selected from the group consisting of 1-(3-dimethyl amino propyl)-3-ethyl carbodiimide hydrochloride (EDC) and 1,8-diazabicyclo [5.4.0] undec-7-ene (DBU).

10. The process according to claim 8 wherein the solvent is selected from the group consisting of dimethylformamide (DMF), acetonitrile, and toluene.